Attachment A
to
NOTICE OF STAFF WORKSHOP #1
Docket No. 06-OII-1

Guidelines for Reducing Bird and Bat Impacts from Wind Development in California

Discussion Topics – July 28th, 2006

I. Need, Purpose, and Use of Guidelines

The intent of these guidelines is to offer a science-based reference for use by California lead agencies (counties, cities, and utilities) in the siting and permitting of wind projects. These guidelines will also be useful for developers of wind energy and their consultants, resource agencies, and other stakeholders. These voluntary guidelines focus on reducing bird and bat collisions with wind turbines by describing the kind of information needed to adequately identify, assess, mitigate, and monitor the impacts of developing and operating new wind energy projects and repowering existing facilities in California.

Some California counties have already adopted wind resource elements as part of their general plans and/or wind energy zoning ordinances (see Table 1 for a summary of and web links to these county ordinances). These siting elements and zoning ordinances generally specify standards for setbacks, height, noise, safety, aesthetics, and where such development may occur. A few of these regulations mention assessment of avian impacts, but none provide specific guidance on studies that are needed to evaluate impacts to bird and bat populations, or how to develop monitoring programs or feasible mitigation.

How should our new guidelines be used by lead agencies? Should counties/cities be encouraged to:

a. provide the guidelines to wind developer applicants' at the beginning of the application process?

b. use the guidelines to evaluate environmental documents provided by wind developers?

c. incorporate elements of the guidelines into their general plans or zoning ordinances?

II. Relationship of Guidelines to CEQA, State, and Federal Wildlife Laws

The siting and permitting of wind projects in California is a process regulated by state and local land use laws, including the California Environmental Quality Act (CEQA), the Planning and Zoning Law, and local ordinances. State and federal wildlife protection laws can also affect the permitting process for and operation of new and existing wind development (see Tables 2 and 3 for a summary of these laws). The Energy Commission's guidelines are being developed to provide a tool to help satisfy these laws and regulations by recommending methods for conducting site-specific biological evaluations that reflect the best available science. These guidelines will also provide information so that a local agency can choose among several well-researched options if it finds that a wind project would have a significant impact on biological resources. Some questions to consider with respect to the relationship of the guidelines to state and federal law:

a. How do we make sure guidelines are compatible with the state and federal laws protecting wildlife?

b. How do the guidelines relate to wind turbine-related fatalities of protected birds and bats?

III. Other Guidelines

Several states currently have or are developing guidelines that address the siting and permitting of wind facilities. Table 4 briefly describes some of these state guidelines, provides a web link to copies of these documents, and summarizes how they address impacts to birds and bats. The focus of most of these guidelines is providing recommended language for local zoning ordinances for counties and cities, with an emphasis on setbacks, relationship to construction codes, safety, and visual impacts. However, some include discussions of how to address impacts of wind development to birds and bats.

Several federal agencies have also produced guidelines about minimizing effects of wind development on wildlife, including the U.S. Fish and Wildlife Service and the U.S. Bureau of Land Management. The U.S. Government Accountability Office recently produced a report that describes the available studies on the impacts of wind power facilities on wildlife and what can be done to prevent such impacts. These documents are available for downloading at: http://www.energy.ca.gov/renewables/06-OII-1/.

Other countries have conducted extensive research on and developed guidelines for wind development-wildlife interactions, with much of the European guidance focusing on offshore wind development (see web link for Collaborative Offshore Wind Research in the Environment (http://www.offshorewindfarms.co.uk) for connections to this research). Scottish Natural Heritage recently produce guidance that offers specific survey methods for assessing impacts of onshore wind farms on bird communities (*Survey Methods for*

Use in Assessing the Impacts of Onshore Windfarms on Bird Communities, Scottish Natural Heritage, 2005.)

Canada has produced interim draft guidelines (*Wind Turbines and Birds – A Guidance Document for Environmental Assessment* by Environment Canada, Canadian Wildlife Service 2005). The goals of the Canadian guidelines are similar to those of California's guideline effort and describe the kind of information needed to assess impacts and develop mitigation for impacts of wind development to birds. The Canada guidelines are available for downloading at: http://www.energy.ca.gov/renewables/06-OII-1/. For this workshop, consider the following questions and talking points:

a. What elements of other guidelines (federal, state, and other countries) would be appropriate to incorporate into California's guidelines? Some examples to consider:

    1. "Level of Concern" matrix that uses sensitivity of site and size of project to determine overall level of concern associated with bird risk and as a tool to give guidance on the duration and level of intensity of pre-construction studies (Canada);

    2. Adaptive management approach for mitigation, an analytical process for adjusting management and research decisions to achieve management goals such as reduction in bird/bat fatalities (Canada, Washington);

    3. Specify minimum number of years for conducting pre-and post-construction studies (Vermont, USFWS);

    4. Formation of Technical Advisory Committee for reviewing monitoring data and making post-construction management recommendations (Washington);

    5. Use of radar to count migrants and identify flight paths where there is medium to very high risk of nocturnal migrants colliding with wind turbines (Canada); and

    6. If wind turbines are causing unacceptable levels of fatalities and avoidance mitigation proves unsuccessful, recommend habitat acquisition or conservation easement to contribute to long-term protection of birds and other wildlife (Canada, Washington).

Table 1

Selected California County and City Ordinances and Regulations Related to Wind Development

County /City	Description of Element/Ordinance	Wildlife Component
Alameda County	Allows wind development only in agricultural districts and only upon issuance of a conditional use permit by the board of zoning adjustments. (Alameda County Code section 17.06.040.); http://www.acgov.org/admin/admincode/	None
Contra Costa County	Non-residential wind energy conversion systems (WECS) are allowed only in agricultural lands, and with a land use permit. (Contra Costa County Code Title 8, Chapter 88-3) http://municipalcodes.lexisnexis.com/codes/ccosta/	None
Kern County	Commercial turbines are allowed on any land designated Wind Energy (WE) Combining District. (Kern County Zoning Ordinance section 19.64.) The WE zoning designation can not be adopted as a single land use designation and can only be combined with the following underlying zoning designations: Exclusive Agriculture (A), Industrial (M-1, M-2, and M-3), Natural Resource (NR) with a minimum lot size of 20 acres, Limited Agriculture (L-1) with a minimum lot size of 20 acres, and Estate (E) with a minimum lot size of 20 acres. (Kern County Zoning Ordinance section 19.64.010(B).) http://ordlink.com/codes/kerncoun/	The wind energy development goal of Kern County's general plan is "to promote the safe and orderly development of wind energy as a clean method of generating electricity while providing for the protection of the environment." http://www.co.kern.ca.us/planning/pdfs/kcgp/KCGPChp5Energy.pdf

County /City	Description of Element/Ordinance	Wildlife Component
Merced County	In Merced County, wind farms are only allowed in Agricultural Zones (A-1, A-1-40, A-2), and only with a conditional use permit. (Merced County Code section 18.02.020.) http://www.qcode.us/codes/mercedcounty/	None
Riverside County	Riverside County requires a commercial wind energy conversion system (WECS) permit for commercial wind farms. WECS having a total rated power of 100 KW or less are permitted in all County zoning classifications with a WECS permit. WECS having a total rated power output of more than 100 KW are only allowed in the Wind Energy Resource Zone (W-E) and the Watercourse Zone (W-1). (Riverside County Code section 18.41.) http://www.tlma.co.riverside.ca.us/ordinances/ord348c.html#ARTICLE_XVII	The Riverside County General Plan states that that "wind turbines should be located away from critical habitat." In addition, the following policies are part of the general plan: LU 15.2: Require wind turbines to address through project design County Regional Parks and sensitive environmental areas. LU 15.8: Wildlife and natural vegetation impacts of proposed commercial wind turbine development shall be considered, including endangered species avoidance and mitigation, bird migration flyways, and may include appropriate consultation with state and federal wildlife agencies. http://www.rctlma.org/generalplan/gp/chapter03.html#TOC3_16

County /City	Description of Element/Ordinance	Wildlife Component
City of Palm Springs	Commercial Wind Energy Conversion Systems (WECS) are permitted in specific zone classifications (Watercourse zone (W), Open Land Zone (O-5), Energy industrial zone (E-I), Manufacturing zone (M-2)) as long as the general plan designates the property within the wind energy overlay and a conditional use permit is obtained. (Palm Springs Municipal Code section 94.02.00(H)(8)). http://municipalcodes.lexisnexis.com/codes/palmsprings/	None
Santa Barbara County	Wind energy conversion systems with a power output that exceeds 200 KW are permitted in agricultural and industrial zones with the issuance of a major conditional use permit and a land use permit. (Santa Barbara County Code Section 35-300). http://www.countyofsb.org/energy/policies.asp	None
Solano County	Solano County contains a detailed Wind Turbine Siting Plan that designates two wind resource areas within the County and contains regulations for the siting of wind farms. Commercial wind turbines are allowed only with a conditional use permit, and only in the following zones: Exclusive Agricultural (A), Limited Agricultural (A-L), Rural Residential (R-R), Park (P), Highway Commercial (C-H), Neighborhood Commercial (C-N), General Commercial (C-G), Commercial Service (C-S), Business and Professional Office (C-O), Limited Manufacturing (M-L), General Manufacturing, (M-G), Water Dependent Industrial (I-WD), and Watershed and Conservation (W). (Solano County Code section 28-50(b)(4).)	None

Table 2. California Department of Fish and Game Codes Related to Protection of Birds and Bats

California Endangered Species Act (1984) Fish and Game Code, section 2050 et seq.	For species that are protected (listed as endangered, threatened or as a candidate) by the state, these species cannot be 'taken' or harmed w/out a 'take' permit provided by the California Department of Fish & Game. Take is defined in section 86 of the Fish and Game Code as hunt, pursue, catch, capture, or kill (and attempts to do so). CESA allows for take incidental to otherwise lawful development projects if certain conditions, pursuant to section 2081 of the Fish and Game Code, are met . The Department can take on the role of a responsible agency when the lead agency requires a CESA Incidental Take Permit for taking of threatened and endangered species incidental to a project. The Department must rely on the lead agency's environmental document for a project to make a finding and decide whether or not to issue an incidental take permit.
Fully Protected Species Fish and Game Code, sections 3511, 4700, 5050 and 5515	Prohibits the take of species (same "take" definition as in CESA) that are classified as Fully Protected. California identifies 13 species of birds, as 'fully protected" including four raptors (American peregrine falcon, California condor, Golden Eagle and white-tailed kite). No bat species are designated as fully protected. There is no provision for licenses or permits to authorize take of fully protected species, except for scientific research, under specified conditions. Therefore, if there is a project with potential for take of a fully protected species there is currently no procedure for which to receive take authorization. Presence of these species may require additional coordination from the Department beyond the compliance with CESA.
Migratory Birds Fish and Game Code, section 3513	Protects California's migratory birds by making it unlawful to take or possess any migratory non-game bird as designated by the Migratory Bird Treaty Act. Any exceptions to this act are based on rules and regulations adopted by the Federal government under provisions of this act.

Table 3. Federal Laws Related to Protection of Birds and Bats

Federal Endangered Species Act (1973) Title 16, U. S. Code section 1531	The Endangered Species Act protects the 18 bird species/subspecies listed as threatened or endangered in California. No bats are currently listed as threatened or endangered in California. The Act prohibits the taking of protected animal species, including actions that "harm" or "harass"; federal actions may not jeopardize listed species or adversely modify habitat designated as critical and authorizes permits for the "taking" of protected species if the permitted activity is for scientific purposes, is to establish experimental populations, or is incidental to an otherwise legal activity.
Migratory Bird Treaty Act (1918) Title 16, U. S. Code sections 703 to 712	Prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when specifically authorized by FWS. At least 603 migratory bird species have been recorded in California. Authorizes permits for some activities, including but not limited to, scientific collecting, depredation, propagation, and falconry. No permit provisions are available for "incidental take." Only criminal penalties are possible, with violators subject to fine and/or imprisonment.
Bald and Golden Eagle Protection Act (1940) Title 16, U. S. Code section 668	This law provides for the protection of the bald eagle and the golden eagle by prohibiting, except under certain specified conditions, the taking, possession and commerce of such birds. The 1972 amendments increased penalties for violating provisions of the Act or regulations issued pursuant thereto and strengthened other enforcement measures. Rewards are provided for information leading to arrest and conviction for violation of the Act.

Table 4.

Wind Development Guidelines from Other States

State	Description of Guidelines/Web Link	Wildlife Component
Connecticut	The Connecticut Siting Council regulates facilities 1 MW or larger that are fueled by renewable energy sources. http://www.ct.gov/csc/cwp/view.asp?a=895&q=248310	Energy facility applications must include "a description of the effect that the proposed facility would have" on ecological integrity, wetlands and watercourses, and wildlife and vegetation, including rare and endangered species, critical habitats, and species of special concern, with documentation by the Department of Environmental Protection Natural Diversity Data Base. http://www.ct.gov/csc/cwp/view.asp?a=945&Q=247580&cscPNavCtr=|#31223
Iowa	Siting authority is at city or county levels, or both. The Iowa Department of Natural Resources (DNR) established guidance—*Iowa Wind Energy Checklist*—on developing a small-scale wind turbine project in Iowa. http://www.iowadnr.com/energy/renewable/files/windchecklist.pdf	The DNR has developed a map of "Areas of Concern for Wind Farm Sitings." The map highlights protected natural resource and wildlife areas where developers may want to take extra precautions when developing wind farms.

State	Description of Guidelines/Web Link	Wildlife Component
Kansas	The Kansas Energy Council issued the *Wind Energy Siting Handbook*, intended for use by county planning boards and zoning commissions. The siting handbook identifies general project guidelines and standards and illustrates these with examples from four Kansas counties that have adopted language or have language under consideration. The handbook also provides application templates for local government officials to use. The Kansas Renewable Energy Working Group also issued nonbinding *Siting Guidelines for Windpower Projects in Kansas* in 2003. http://www.naseo.org/committees/energyproduction/documents/wind/kansas_siting_guidelines.pdf Information related to wind energy and energy facility siting in Kansas is available from the Kansas Energy Information Network. http://www.kansasenergy.org/wind_resources.htm.	The *Siting Guidelines for Windpower Projects in Kansas* contains a section on "Natural and Biological Resources Guidelines." The guidelines include recommendations to evaluate the biological setting early in the process, to communicate with resource management agencies and environmental groups, and to consider impacts to legally protected wildlife, native vegetation, and wildlife movement corridors. Additionally, consideration of mitigation strategies and cumulative impacts are recommended in the guidelines.
Massachusetts	The Energy Facilities Siting Board (EFSB) reviews energy facility projects capable of producing 100 MW or more. In 2000, the Massachusetts Division of Energy Resources published the *Renewable Energy & Distributed Generation Guidebook*. http://www.mass.gov/doer/pub_info/guidebook.pdf	A petition to the EFSB to construct an energy facility must include a description of the environmental impacts and the costs associated with the mitigation, control, or reduction of the environmental impacts of the proposed generating facility. In addition, projects must comply with the Massachusetts Environmental Policy Act.

State	Description of Guidelines/Web Link	Wildlife Component
Michigan	The Department of Labor & Economic Growth (DLEG) issued *Michigan Siting Guidelines for Wind Energy Systems* in 2005. The document includes recommended zoning language for local governments to use if they amend their zoning ordinance to address wind energy systems. The Energy Office of the DLEG has no authority to issue regulations related to siting wind energy systems. http://www.michigan.gov/documents/Wind_and_Solar_Siting_Guidlines_Draft_5_96872_7.pdf	The guidelines recommend that permit application include third party analyses to assess potential impacts to wildlife and endangered species. Particular scrutiny is directed at wildlife sensitive areas, including bird migration pathways, wildlife refuges and raptor concentrations, and bat hibernacula. The guidelines specify that the project analysis indicate whether a post-construction wildlife mortality studies is needed. For site-specific guidance, the reader is directed to the USFWS Interim guidelines.
Minnesota	Minnesota's wind permitting process requires that developers secure site permits from the Public Utilities Commission for any facility larger than 5 MW. http://energyfacilities.puc.state.mn.us/wind.html http://www.eqb.state.mn.us/pdf/FileRegister/01-16-WIND-RULES/windruleslastversion.pdf	Environmental review is part of the application and permitting process for wind facilities, and the state can place conditions on several characteristics related to siting a turbine, including vegetation, wildlife and natural resources.
New York	Wind energy is regulated by local authorities. New York State Energy Research and Development Authority (NYSERDA) is currently investigating impacts on birds and bats resulting from on-shore wind power development in New York State, and working to develop a strategy for a comparative analysis of the environmental impacts of wind power as compared to the impacts of conventional forms of power production. The NYSERDA has also developed a "Wind Energy Toolkit" which includes a wind energy model ordinance and other information that local communities can use in making decisions regarding wind development. http://www.powernaturally.org/Programs/Wind/toolkit.asp	The wind energy model ordinance contains language regarding impacts to raptors and siting of turbines close to "Important Bird Areas" and wetlands. The toolkit also includes information on assessing bird and bat impacts and survey techniques.

State	Description of Guidelines/Web Link	Wildlife Component
Oregon	The Oregon Energy Facility Siting Council has primary responsibility for issuing site certificates for wind facilities that have peak generating capacities of 105 MW or more. Local jurisdictions regulate smaller facilities. http://egov.oregon.gov/ENERGY/SITING/docs/WindSite.PDF	Energy facilities are prohibited in protected areas such as "national and state parks, national monuments, wilderness areas, wildlife refuges and other areas that have special scenic, natural or environmental value" and "must comply with wildlife habitat mitigation goals and standards established by the Oregon Department of Fish and Wildlife." Additionally, the "Siting Standards for Wind Energy Facilities" require avoiding the creation of habitat for raptors or raptor prey.
Vermont	The Vermont Agency of Natural Resources released draft *Guidelines for the Review and Evaluation of Potential Natural Resources Impacts from Utility-Scale Wind Energy Facilities in Vermont* in April 2006. The purpose is to describe the information needed by the Agency to provide recommendations for the Public Service Board. It provides a detailed outline of expectations for pre- and post-construction data collection and general guidelines for construction, operation, and maintenance of utility-scale wind facilities. http://www.anr.state.vt.us/site/html/RMAR.htm	Appendix B of the draft guidelines provides details on Vermont's Fish and Wildlife Department position on the information needs for assessing impacts. Three years for post-construction monitoring is specified, with no duration recommended for pre-construction. Radar surveys are noted as a necessary baseline.
Virginia	The Virginia Wind Energy Collaborative Environmental Working Group published "A Landscape Classification System: Addressing Environmental Issues Associated with Utility-Scale Wind Energy Development In Virginia" in April 2005. The Landscape Classification System is intended to be used by wind developers, state and federal agencies, landowners, and environmental organizations involved in siting of utility-scale wind development in Virginia. http://www.vawind.org/Assets/Docs/LCS-100805.pdf	Section 6.2 of the document discusses displacement and mortality of birds and bats.

State	Description of Guidelines/Web Link	Wildlife Component
Washington	The Washington Department of Fish and Wildlife issued guidelines to be used when siting wind facilities in the state. The *Wind Power Guidelines*, issued in August 2003, are available online. http://wdfw.wa.gov/hab/engineer/windpower/	Section 1, "Baseline and Monitoring Studies for Wind Projects," provides guidance for raptor nest surveys within a one-mile radius of project area and one full season of avian use surveys, with additional fall or winter surveys recommended if warranted, as well as surveys for sensitive species and data base searches and habitat mapping. There are no specific recommendations for duration and scope of operational monitoring. A technical advisory committee is recommended for reviewing results of monitoring data to provide guidance on making adjustments to monitoring or mitigation.
West Virginia	Title 150, Legislative Rule, Public Service Commission, Series 30. Rules Governing Siting Certifications for Exempt Wholesale Generators http://www.wvsos.com/csr/verify.asp?TitleSeries=150-30	For wind powered electric generation facilities only, preconstruction requirements include: copies of a Spring and Fall migration study; file copies and state the results of a Phase I Avian Risk Assessment, and a risk assessment regarding bats; file copies of and state results of an avian and bat lighting study from empirical data on similar facilities. Operation requirements include: After the 24-2-1(c) generating facility has been in operation for one year, the applicant shall perform and file with the Commission the results of an avian and bat lighting study conducted for one year after the 24-2-1(c) generating facility commences operation.

State	Description of Guidelines/Web Link	Wildlife Component
Wisconsin	*Considering Natural Resources Issues in Windfarm Siting in Wisconsin: A Guidance*, issued by the Wisconsin Department of Natural Resources, recommends guidelines to be used for the "environmentally sound siting of utility-scale wind-electric generating facilities." The guidelines recommend using the USFWS guidelines in conjunction with the Wisconsin guidelines. http://dnr.wi.gov/org/es/science/energy/wind/	Guidelines recommend avoiding the siting of wind farms near officially designated wildlife areas such as state parks, areas "known to have significant use to wildlife, mainly birds and bats", bird migration corridors, landfills, wetlands, lighted facilities that could attract birds and bats, and wooded corridors. The guidelines also recommend conducting baseline wildlife evaluations for sites under consideration and consulting with wildlife agency personnel. Incorporation of mitigation measures into project design and two years of post-construction monitoring are also recommended.